THE ZOOLOGIST

No. 216.—December, 1894.

ON A NEGLECTED SPECIES OF BRITISH FIELD MOUSE, *MUS FLAVICOLLIS*, MELCHIOR.

By W. E. DE WINTON.

THIS species of Field Mouse, described in 1834 by Prof. Melchior, of Copenhagen, on page 99 of his work on Danish and Norwegian Mammals,* has hitherto been disregarded by British naturalists, although several writers, under *Mus sylvaticus*, have mentioned that "a larger variety measuring 4½ inches, exclusive of the tail, is sometimes found in woods";† but beyond this they do not go. Field Mice answering the description of Melchior's *flavicollis*, being abundant in some of our English counties, I think this animal should find a place in the list of British mammals; and for my part I quite agree with Melchior that it is a perfectly distinct species, since, apart from its size and colour, the special characters of the skull, hereafter to be described, sufficiently entitle it to that rank.

In the first place I will describe its outward appearance, and show how it can be distinguished from *Mus sylvaticus*.

The full-grown animal measures as follows:—Head and body, 108 to 115 mm. Tail, 108 to 115 mm. (the greater measurements not necessarily belonging to the same animal, but the head and body and tail measurements of each individual will generally be found within 5 mm. of one another, sometimes the head and body, sometimes the tail, giving the longer measurement). Hind

* 'Den danske Stats og Norges Pattedyr,' 8vo, pp. xvi. 298, pls. 13.

† *Cf.* Jenyns, Man. Brit. Vert. An. 1835, p. 31.

foot, 24 mm. Ear, 18 mm. For the purpose of comparison, I will here give a few measurements of *Mus sylvaticus* and *M. flavicollis*, adult mice with worn teeth, and young in the grey plumage. All figures are in millimetres, and taken from specimens in the flesh by myself. The ear is measured from the notch, and the length of the hind foot does not include the claw. The measurement of the head and body + the tail may be relied on as giving the total length of the animal.

	Mus sylvaticus.				Mus flavicollis.			
Sex, *ad.*	♀	♀	♀	♂	♀	♀	♂	♀
Head and body.	93	92	92	97	108	110	110	115
Ear	17	16	17	17	18	18	18	18
Hind-foot.....	22	22	22	23	24	23	24	24
Tail	86	82	78	85	108	115	112	112
Sex, *juv*.....	♂	♂	♀	...	♀	♀	♂	...
Head and body.	83	83	71	...	81	84	68	...
Ear	16	16	16	...	16	16	16	...
Hind-foot.....	22	21	20	...	21	22	20	...
Tail	75	79	59	...	84	83	60	...

All the specimens above measured were caught within an area of thirty acres, but the species did not intermingle; yet there was no natural boundary or observable difference in the soil on which they were found.

In comparison with *Mus sylvaticus*, the general colour of the upper parts in *M. flavicollis* is brighter, especially along the sides and legs, and the under parts of almost pure white, excepting the gorget or breast-plate of clear yellowish brown (from which it takes its specific name); this band is about 8 mm. broad, passing across the chest, immediately in front of the fore legs, with a cross or longitudinal stripe in the centre extending forward about 5 mm., and back along the sternum about 10 mm., where it is entirely lost, unlike the slight dash of colour so frequently found on the chest of *Mus sylvaticus*, and which varies from the smallest spot on the breast to a decided yellow-brown tinge extending over the whole belly.

The richer colouring of the upper parts in *Mus flavicollis*, and the pureness of the white on the under side, with the very

distinct line of demarcation, give this mouse a peculiarly striking appearance; it is almost as beautiful as a Squirrel. Its large ears and wide-open prominent eyes, its long tail, and hind feet are fully as much developed in proportion to its size as in *Mus sylvaticus*, consequently the measurements are greater.

Now as to its structural peculiarities. The tail is made up of 30 vertebræ, whereas in *sylvaticus* I have never found more than 27. In the skull the differences are not easy to describe—the measurements being so minute—and are hard to work out, owing to the difference in the size of the respective skulls; but the skull of *M. flavicollis* is readily distinguished from that of its near ally by its greater length, which is usually 29 mm. in the perfectly clean skull. This may be only in proportion to the larger size of the animal, but it is a longer-, narrower-, stronger-looking skull; the point of the nasal bones where they join the frontal is sharper, and—what is a far better character—the angle of the suture of the frontal and parietal bones is more acute; the superciliary ridges are well developed, while in *sylvaticus* they are hardly noticeable even in the oldest individuals. The orbito-temporal fossa, or all the space between the zygoma and the skull, is longer and narrower; looking at the skull from above and behind, and likening it to a vase, the "shoulders" are much more sloping. The dentition is the same as in *M. sylvaticus*.

The bright fawn-coloured band *across* the chest distinguishes *M. flavicollis* at all ages and in all seasons, though in the plumbous-coloured young naturally the colour is not so bright; still the more or less chestnut-tinged dark band is quite noticeable in the smallest mouse that is ever likely to be caught in a trap.

The general habits of this mouse are similar to those of *sylvaticus*; there may be slight differences, but I am not prepared just now to fix them.

The distribution of this mouse seems to be very local, and the localities in which it occurs are widely separated, not occurring, so far as I know, apart from *sylvaticus*, yet never crossing, as I believe, or even mixing with that species.

At first I was inclined to describe this mouse as peculiar to Herefordshire, it being particularly abundant around Grafton-bury in this county, and also at Bishopstone in the same county, where, in 1885, three specimens, now in the National Collection, were obtained by Mr. H. N. Ridley.

Among two or three hundred skins of Wood Mice, mostly in the Collection now being formed by the efforts of Mr. Oldfield Thomas from all parts of the British Isles and Europe, not one of this species occurred, until about a month ago one appeared among some skins sent from Oundle by Lord Lilford, and further search showed that there was another specimen in the Museum Collection from Tharand, in Saxony. This latter specimen clearly proved that the larger variety casually mentioned by continental writers should also be referred to this species.

When I thought I had come to the end of all literature on European mice, I happened to come across Schiödte's 'Zoologia Danica' (1878—93), and turning up *Mus sylvaticus* I found mention of a form called by Melchior *Mus flavicollis*, as stated in the commencement of this paper, and on referring to Melchior's work I saw my mouse described and fairly accurately figured in a coloured plate.

Sixty years have elapsed since this species was described and named, and yet it seems to have been entirely overlooked, a fact which only shows how little work has been done in regard to the smaller mammalia, and how necessary it is to see a good series of specimens, such as I have already alluded to, when working out a species. I am proud to say that I have already contributed largely to this collection, and now add my fine series of *Mus flavicollis*.

The peculiarities of the skull undoubtedly are only those we should expect to find in a giant race, but seeing that they seem constant in the adults, and that the colour variation shows itself in the immature pelage, I think we have quite good reason to give this mouse specific rank. The distribution, of course, is the puzzle; had this mouse been an isolated form, or confined more or less to a certain area, there would have been no question of the species being valid; but these problems we must endeavour to solve, and there certainly is no question that Melchior's name and work should no longer be left unnoticed.

I trust these remarks may be the means of showing how much we have neglected our own small mammals, and I hope before long to make known more interesting facts relating to the local forms and distribution of other species.

In conclusion, I may add that *Mus sylvaticus* still fights the

battle of life against the number of prowling cats and two-legged enemies in our London parks, though in appearance it hardly comes up to country form, and a friend has shown me some very fair specimens recently taken at Fulham.

[Mr. de Winton has been good enough to show us several skins of his *Mus flavicollis*, with others of *Mus sylvaticus* for comparison. There is certainly a remarkable difference in size; but we have so frequently observed such variation in the size of individuals of the same species (just as with man himself), that we consider measurements go for little; while the other points of difference relied upon are so slight (the dentition being admitted to be identical), that it is doubtful whether they are of specific value. In a review of Melchior's work which appeared, soon after it was published, in Wiegmann's 'Archiv für Naturgeschichte,' 1836, p. 76, the editor expressed his decided opinion (p. 78) that *Mus flavicollis* of Melchior was nothing but a large variety of *M. sylvaticus*, and subsequent writers on the subject seem to have been satisfied with this opinion. The subject, however, is one that deserves reconsideration, and Mr. de Winton does well to bring it once more under the notice of naturalists.—Ed.]

THE WEASEL, *MUSTELA VULGARIS*.

By the Editor.

(Concluded from p. 423.)

One of the witnesses, David Glendenning, who had been a shepherd at Coom for eight years, on being asked by the Chairman of the Committee above mentioned whether he had ever seen a Weasel kill a Vole, replied:—

"Yes; about three weeks ago I came upon a small brown Weasel which had killed five in one of the sheep-drains. I followed it up, and found it killing a sixth. A week past, on Sunday morning, I came down a drain for 250 yards or so. A Weasel had been before me, and there were twenty-two dead Voles in the bottom. I secured a specimen last night, in order to show you the way a Weasel destroys a Vole. The blood is entirely drawn from behind the left ear. There is not a bit of the Vole marked otherwise, except by the tooth-marks on the head. All those I have seen were killed in the same way" (222).

On being asked whether the Stoat and the Weasel eat the flesh of the Voles they kill, he replied:—

"I once saw a Stoat eat a Vole entirely, leaving nothing but the inside (*i. e.* the entrails). In a general way they only suck the blood. They have to be very hungry before they meddle with the flesh" (224).

Another shepherd, John Inglis, of Ropelaw Shiel, on being asked to what cause did he attribute the plague of Voles then existing, replied:—

"We think it is on account of the Weasels being so very sorely killed by the game-tenant's keepers. That has allowed the Voles to breed to such an extent" (273).

James Hope, a shepherd at Medlock, after describing the way in which Weasels and Stoats were caught in box-traps for exportation, was asked whether he considered it a mistake to allow them to be caught on the ground and sent out of the country. He answered:—

"Yes, certainly: I consider it a great mistake when it has come to what it is" (referring to the plague of Voles).

"Q.—Because you consider they do so much good in killing Mice, I suppose? A.—Yes" (1104-1105).

Mr. John Morton, tenant farmer at Nether Abington and Elvanfoot, remarked:—

"We are always glad to see a Weasel about the farmhouse. I insisted upon the keepers protecting them near the buildings, because they killed the Rats about the stackyards" (1255).

Asked, "Do you advocate importing Weasels?" he replied:—

"Yes; I think that is one of the best things we could do. I would willingly pay my share of the expense of importing them, if they could be got anywhere. I have not seen a Weasel on my farm for some time. On the neighbouring farm to mine I know that about half-a-bushel of Voles were found lying dead round about the hole of a Weasel's nest" (1259).

Mr. James Wallace, a tenant farmer, of Auchenbrack, thought that "had the Weasels been as plentiful as formerly, the Voles would not have been so numerous" (1972).

These are half-a-dozen specimens out of nearly a hundred answers given by local witnesses on hill-farms affected by the Vole plague, 1891-92.

Yet, notwithstanding the usefulness of the Weasel in killing Mice and Voles, as deposed to by so many witnesses, there are others who give orders for their destruction on the plea of their

killing game. For instance, Mr. C. J. Massey, of Galloway House, Garlieston, Wigtonshire, made the following admission (1710):—

"Since I went to Galloway House I have taken a particular note of all the vermin killed, and for that purpose I have a 'vermin-book,' which the keepers fill in, and bring a return to the head gamekeeper every week. It is sent to me monthly, and I can see for myself from it how many have been killed. We killed last season (1891–92) 556 Weasels at Galloway House, and I believe that fully one-fifth were Stoats, the remaining four-fifths being little Weasels."

It would seem, however, that the Weasel is sometimes blamed for the work of the Stoat. Andrew Watson, a gamekeeper in Teviotdale, admitted that "Weasels will not stop much up on these high ranges," where Grouse are. They are down on the sheep-farms where the Voles abound, and where there is little or no game, and about the farmsteads or "shielings," the haunts of Rats and Mice. It is the Stoat which lives in the loose stone walls on the higher ranges, and which preys chiefly on Rabbits, which (according to the head keeper of the Duke of Buccleuch at Drumlanrig) "are to a certain extent over most of our moors, and where they are, the Stoats prefer them to Voles."

The head keeper of the Duke of Buccleuch at Langholm, Mr. John Kerss, having about 100,000 acres under his charge, was asked (908):—

"When you use the word 'Weasel' do you apply that term in the generic sense, including both the larger Stoat and the smaller Weasel?—Yes.

"Do you mean to say that the smaller one of the two is destructive to game?—Yes; to a certain extent, but not to the same extent as the larger one.

"Would you not say that the smaller animal hunts Rats and Mice in their runs?—Yes; it goes under the name of *Mouse-hunter*.

"Then you would not consider it so destructive (to game) as we have been led to infer?—Not nearly so."

Both Weasels and Stoats were admitted by several witnesses to be very useful in keeping the stock of Rabbits down within reasonable limits. One witness, Mr. John Borland, of Auchencairn, over whose farm Weasels had been exterminated, said, "For the last ten years we have had an annual plague of Rabbits, and there is not a single Weasel left to prey on the young broods of Rabbits."

It is satisfactory to know that this state of things is being altered; that a reaction has set in in favour of the Weasel, as well as of the Kestrel; and we have it on the authority of Mr. John Bell, head gamekeeper to the Duke of Buccleuch at Drumlanrig, that he "had instructions from his Grace *not* to kill Kestrels and Weasels, which instructions, of course, have been strictly adhered to" (2059).

In the granary and the straw-yard, as the late A. E. Knox has well observed,* "the Weasel is eminently useful, far more efficient than a cat, and a worthy ally of the White Owl. Indeed, besides the quantity of Rats which it destroys, even during a temporary sojourn in such situations, a still greater number of those noxious animals are frequently induced to migrate from the spot where it has once firmly established its quarters."

The *modus operandi*, or we might say *venandi*, in the case of the Weasel, has been accurately described by Dr. Ritzema Bos, in his 'Tierische Schädlinge und Nützlinge für Ackerbau.' He says:—

"Chiefly during the night—especially in abundant mouse-years—but also to some extent in the day, it is busily occupied in catching Field-mice. As soon as the slender little carnivore creeps into a mouse-hole, the terrified rodents may be seen springing up, as if possessed, from the neighbouring burrows; but the Weasel has speedily seized a mouse by the throat. and has bitten into the arteries of the neck, so that it may taste the blood of its victim. Inasmuch as the Weasel, like other members of the Marten family, only eats its prey when in need (being usually satisfied with merely drinking its blood), it requires many Field-mice for its daily food. There thus comes upon it a delight in killing, so that even when satiated it still goes on killing for mere pleasure. Hence it is that a single Weasel may easily destroy two dozen Field-mice, or it may be more, in the space of one day. When the Weasel has young, it drags many dead mice into its nest. As destroyers of Field-mice, the Weasels excel over other similar animals of prey—firstly, by their far greater number; secondly, by their slender, snake-like, active bodies, which enable them to search as no other animal can for the Field-mice in all their holes and burrows; and, thirdly, by the circumstance that they continue the destruction of mice through the winter."

The Weasel appears to be more sensitive to cold than the Stoat, and during hard weather keeps to the shelter of the rick-

* 'Gamebirds and Wildfowl,' p. 256.

yards and farm-buildings, wood-stacks and old hedge-banks, where there is plenty of thick undergrowth. On the 3rd January, after a sharp frost the previous night, we found a Weasel lying dead and frozen on a fallow field, where, prompted to hunt by hunger, it had succumbed to the severe weather.

Although in this country the Weasel does not turn white in winter like the Stoat, it does so in the north of Europe, and in its white garb is the *Mustela nivalis* of Linnæus. Occasionally albino specimens have been met with, but must be considered rare.

In 'The Zoologist' for 1866 (p. 384) Mr. T. E. Gunn reported the capture of an albino Weasel in Norfolk, and in the volume for 1868 (p. 1186) Mr. Cordeaux stated that "a white Weasel, probably an albino, had taken up its quarters in an oat-stack in his yard." In 1879, the late Mr. Gurney, of Northrepps Hall, Norwich, mentioned one which was killed there in Nov. 1878, "evidently assuming a white winter coat, a circumstance which is very rare in the Weasel, though not uncommon in the Stoat. The front and sides of the head were already quite white, and white hairs were appearing amongst the brown ones in all those parts of the animal which are normally brown, and especially on the flanks and tail" (Zool. 1879, p. 30). On Sept. 27th, of the same year, the late Mr. F. Bond obtained "a pure white Weasel, full grown, a true albino with pink eyes. It was killed by a dog in Soham Fen, Cambridgeshire" (Zool. 1879, p. 455).

In 1884, Mr. J. J. Brigg, of Kildwick, near Leeds, reported the capture, in the latter part of November of that year, of "a Weasel perfectly white, including the tail, and the eyes a dull pink" ('The Field,' 5th Jan., 1884); and in Oct. 1889, Mr. Corbin, of Ringwood, saw a perfectly white Weasel, which had been caught by a man cutting faggots in the New Forest. It proved to be a male, and a true albino with pink eyes (Zool. 1889, p. 449). In addition to these, we have seen in the collection of Mr. Borrer, of Cowfold, near Horsham, a pure white Weasel which was killed at Willoughby, in Leicestershire, during the winter of 1867.

Referring to the change of colour which takes place in the Stoat in winter, Bell states (Brit. Quad., 2nd ed., p. 196), that "this is effected not by the loss of the summer coat, and the substitution of a new one for the winter, but by the actual change of colour in the existing fur." On the other hand, the late

Henry Wheelwright, better known as a writer on Natural History under the signature of "The Old Bushman," has asserted just the reverse, stating that he had proved it by keeping specimens in confinement.* This was also the opinion of the late Edward Blyth, one of the most experienced zoologists of modern times. On this subject the reader may be referred to an interesting communication "On the Colours of Arctic Animals," published by Prof. Meldola in 'Nature' of April 2nd, 1885 (p. 505).

In Bell's work, which for want of a better still remains the text-book on British Quadrupeds, nothing is said about the absence of the Weasel from Ireland. The late Mr. Andrew Murray, in his 'Geographical Distribution of the Mammalia' (p. 114), says the Weasel *formerly* inhabited Ireland, but is no longer found there. Macgillivray states that it is "generally distributed in Ireland";† but Thompson‡ says he has never met with it there, nor does he consider that it has been proved to be a native, though it may be so. On the other hand, the Stoat, which is called the Weasel in Ireland, is common there. The late Col. J. J. Whyte, of Sligo, a well-known sportsman and excellent out-of-door observer, writing on this subject in 'The Field' (July 11th, 1874), observed:—

"I am aware that it is the right thing to say that we have no Weasels in Ireland; *certes*, I never saw an animal of the sort without the black tip to the tail. Many of them,—I may say most of them,—however, are so small, that a man who does not profess to be a naturalist is left in doubt whether he is not looking at a Weasel with a black tip. I have one before me now, an old bitch, giving suck,—whose size is exactly that given by Bewick as that of the Weasel, — 7¼ in. from nose to tail; tail 2 in., brush ¾ in. I do not remember ever seeing any so small in England, though common enough here, as well as the larger size."

Another correspondent, resident at Acomb, near York, on the 5th Dec., 1885, on his return from Ireland wrote as follows:—

"Whilst travelling in County Mayo last summer, I found the Weasel —by name at any rate—very well known on the west coast, and held in great respect by the peasantry, to whom no greater offence could be given

---

* 'Ten Years in Sweden,' 1865, p. 219.

† 'British Quadrupeds,' in Jardine's 'Naturalists' Library,' vol. vii. p. 164.

‡ 'Nat. Hist. Ireland,' vol. iv., pp. 6, 7.

than by killing one, as I was told by a gentleman sportsman, native of the country, they, in the remote parts, believing that the Weasels were the Cats belonging to the country when the Danes held sway over it; but I made no enquiry whether the Weasel was properly so called, or its near relative, the Stoat."

In July, 1887, the following letter was received from Mr. Charles Meldon, of Woodpark, Scariff, Co. Clare :—

"Sir, — My attention was arrested, when reading 'The Field' of Saturday, by a note of yours (annexed to a letter headed 'A Trap for Weasels'), stating that it is doubtful if the Weasel exists in Ireland, and suggesting that the Stoat is the animal which is mistaken for it. Now I am in a position to throw some light on this interesting subject. Living in Ireland, and having had ample opportunity of becoming acquainted with the enemies that attack game, I can state that until last Sunday week (July, 1887) I never saw in Ireland what is known in England as 'the Stoat.' My knowledge of this species of vermin is extensive, inasmuch as for some years past I have had a shooting in Hants, where Stoats abounded until my keeper got rid of them. The Stoat is very much larger than the Weasel, much coarser, with a black-tipped tail, and emits when hunted or annoyed a most pungent stench. The Weasel is much smaller, finer in the head, sharper-looking, brighter and more piercing eyes, easily attracted by imitation of the cry of the Rabbit, and, so far as I am aware, it does not emit the same fearful stench as the 'Stoat.' Of the smaller animal called the Weasel I have seen (caught and shot) hundreds in Ireland; they are very numerous. The Weasel in Ireland, as in England (where I have also met with a large number), follows and destroys Rats, which the Stoat (so far as I am aware) does not do. As before mentioned, Stoats and Weasels were numerous at my shooting in England, and I am well acquainted with both animals and their habits. I have shot all descriptions of game in Ireland, and have seen hundreds of what are called Weasels in England, but have never seen a 'Stoat' until last Sunday week, when I killed one under most peculiar circumstances. Having recently taken a shooting here, where there are a fair number of Rabbits, I came to reside a fortnight ago. On my return home, on the day named, one of my servants reported the presence of a strange animal in the dining-room. Having proceeded there, I killed a medium-sized Stoat, the skin of which I preserved as a curiosity, as never having seen one in Ireland. When hunted, the Stoat emitted and filled the house with the stench peculiar to the species. From enquiries I have made about it, also because of the Rabbits not being so numerous as they should be, and from their habits, which are in some respects peculiar where Stoats abound, I believe that there are Stoats here; but I have not seen any except the one I killed. I have seen and shot

several Weasels, however, during the past few days. The skin of the Stoat I killed measures, from snout to tip of tail, 19 inches. I shall be glad to send you the skin, as also the carcase, of a Weasel, if you care to have them.

"With reference to Mr. Johnston's letter, I may mention that the Stoat or Weasel is easily attracted to a trap by suspending over it a bait in the shape of part of a Rabbit, or dead Rat, or other strong-smelling piece of an animal, the more stinking the better. Indeed this is the usual way of catching both these animals. I fancy Mr. Johnston will find such a bait equally attractive as the dead Weasel.—Faithfully yours, CHARLES H. MELDON (Woodpark, Scariff, Co. Clare), 12th July, 1887."

Replying to this communication, we pointed out that no proof had been hitherto afforded by any one that the Weasel was a native of Ireland, and urged the desirability of procuring specimens in order to set the matter at rest. To this letter came the following reply:—

"Thanks for your letter. I will send forward some specimens of the Weasel family as soon as possible. Frequently when one wants a specimen delay occurs in securing it. I will, however, do my best. Since writing my last letter, a gentleman in the neighbourhood, who comes here from England, tells me that Stoats are numerous here, as also the *Mustela vulgaris*."

Notwithstanding this kind assurance, no Irish specimen of *Mustela vulgaris* has yet come to hand.

Another correspondent, Mr. Samuel Coventry, having taken up 'The Field' while at Galatz, in Roumania, and noticed the editorial remark above referred to, wrote as follows:—

"I see there is still a doubt as to whether the Weasel occurs in Ireland. I think both the Weasel and the Stoat exist there. I lived in the County Cork from 1851 to 1867, and with my terrier I came across several Weasels, as I thought, and one Stoat. The Weasels were light brown, but the Stoat was chocolate-colour with a black tip to its tail. I also saw what I considered a Weasel at Ballina, on the top of a wall, as I was riding one day. The Stoat I killed with terriers after a tremendous hunt. Friends of mine have also considered they killed Weasels in the Co. Cork. You are at liberty to publish this if you like. I have no doubt of the existence of the Weasel in Ireland.—SAM. COVENTRY (Galatz, Roumania)."

The most positive evidence which has hitherto been tendered on the subject is that of our friend Mr. Borrer, of Cowfold,

Sussex, who, writing in 'The Zoologist' for 1877 (p. 291), stated as follows:—

"On the 5th Nov. last, when visiting a friend in the Co. Mayo, I saw a Weasel one afternoon hunting about a stone wall at Currawn, near Achill Sound, and, as I watched it for some time at the distance of only a few yards, I could not possibly have been mistaken as to the species. I know both the Stoat and Weasel too well to mistake the one for the other, and, had I been aware at the time of the existence of any doubt on the subject, I could easily have shot and forwarded the specimen."

Thus the matter stands; and we can only express a hope that, having here brought together such scanty information as is at present available, some of our naturalist friends in Ireland will seriously give attention to it, and help to set at rest more completely this much-vexed question.

In Scotland the Weasel appears to be generally distributed, and Bell mentions one received from the extreme north. In the summer of 1892, when accompanying the Committee appointed by the Board of Agriculture to enquire into the plague of Field Voles on the lowland sheep farms, we found that the Weasel was well known to most of the farmers, shepherds, and gamekeepers, in the counties of Roxburgh, Selkirk, Dumfries, and Kirkcudbright, and its extreme usefulness in killing the Short-tailed Field Vole was generally admitted.

Messrs. Harvie-Brown and Buckley include it in the 'Fauna of Sutherland and Caithness' (p. 77), where it is stated to be not so common as the Stoat, and not ascending the hills to any great altitude, preferring the proximity of houses and farmyards. In Caithness the two species are looked upon as the same animal, and both receive the local name of "Whitteret" or "Futteret." The last-mentioned authors, also, in their 'Fauna of Argyll and the Inner Hebrides,' refer to the Weasel as being generally distributed and common over most of the mainland, but absent from the Isles, in which all "returns of vermin killed" may be held entirely to apply to the Stoat. On the mainland Weasels were reported as travelling in companies, reaching new grounds in either large family parties or several families joining forces, and sometimes twenty or thirty might be trapped in a succession of nights at the same spot.

The late Edward Alston, at p. 12 of his 'Report on the Mammalia of the West of Scotland,' remarked that the Weasel is

absent from all the Western Islands with the exception of Islay, but even there the fact of its occurrence has not been confirmed by the enquiries instituted by Messrs. Harvie-Brown and Buckley. In Skye, nevertheless, it appears to be well established. Mr. H. A. Macpherson, who is familiar with that island, has seen it trapped in a district where it is more numerous than the Stoat.*

In Shetland, according to tradition, the Weasel is said to have been introduced many years ago, out of revenge, by a falconer "who had been denied his hawk-hens."†

In Orkney, on the other hand, Messrs. Harvie-Brown and Buckley, in their 'Vertebrate Fauna of the Orkney Islands,' have not been able to adduce any evidence of its existence.

In the accompanying plate (Plate IV.) we give a portrait of the little Harvest Mouse (*Mus messorius*), which in the corn-lands of England, particularly in the South, often falls a prey to the Weasel. In a future number we propose to give some account of it.

ON THE ATTITUDES OF A LITTLE BITTERN OBSERVED IN CAPTIVITY.

By A. F. Griffith, M.A.

(Plate III.)

A young male of the Little Bittern, *Botaurus minutus*, was caught alive on the morning of Sept. 3rd, in a stable at Hove, on the outskirts of Brighton. It was first seen about daybreak flying round an enclosed yard. Later on it was observed sitting motionless in a stable which leads out of the yard, and was there caught, after causing its captor some misgivings from the uncanny way in which it kept its long neck, head, and beak bolt upright, with its bright yellow eyes always turned towards him, but otherwise motionless. When he at last plucked up courage to lay hands upon it, it lunged out viciously with its beak against his hand. He then took it to Messrs. Pratt & Son's, where I saw it the same afternoon.

We placed the bird under a large glass shade, where we could observe its movements at very close quarters. First it stretched out its left wing downwards to touch the ground, craning its long

* *Cf.* 'Zoologist,' 1884, p. 381.

† *Cf.* Sibbald's 'Zetland,' p. 22; Low's 'Fauna Orcadensis,' p. 29; and Baikie and Heddle, 'Hist. Nat. Orcadensis,' p. 11.

West, Newman imp.

Harvest Mouse.
Mus Messorius

Least Bittern. *Botaurus exilis*

neck to its full length, sometimes directly upwards, sometimes swaying it forward or sideways, sometimes stretching it out, still at full length, and inclined downward, till the tip of the beak just rested on the ground. In all these movements the head and beak were kept in a nearly continuous straight line with the neck when the latter was extended. Then it would sink down with its long neck folded against its breast, and its head and beak directed straight upward, in which position the "ruff" of feathers on the throat formed a smooth, regular, keel-shaped projection from chin to breast. Directly we put our faces near it, it gave a vicious lunge straight for an eye, which made us glad of the intervening glass. But though it could never resist such an opportunity, it would not, while I was there, trouble itself to attack a finger or hand held out toward it.

To thoroughly appreciate the eerie look of the bird, it was necessary to look *up* at it from underneath while its head was stretched straight up. Its bright eyes with their light yellow irides glared down straight at me in a most unaccountable way, and as I moved to one side or the other, its throat and eyes seemed automatically to turn facing me, so that I could somewhat sympathise with any wretched young frog or other prey that, in a similar position to mine, might try to steal away unobserved.

The tarsi were usually inclined upward and backward, and the bird appeared sometimes to rest with the proximal ends of the tarsi on the ground. The toes have a most remarkable prehensile power, and when Mr. Pratt took the bird in his hand, it curled its hind toes up so that the point of each not only touched the base, but actually curled half-way up upon itself in a most extraordinary way. It sat firmly on the perch of a Blackbird's cage, in which it was placed when first caught, and closed its hind toe firmly and closely round the tape which formed the fastening of the birdstuffer's apron.

The attitudes were so remarkable that I prevailed on Mr. Pratt to allow me to have it photographed; and though it was 6 o'clock in the evening, and there was none too much light, his neighbour Mr. Norman managed to get a few striking portraits, two of which (reproduced in Plate III.) may interest your readers. Allowance must be made for lack of daylight and other difficulties, but the drawings give a very fair idea of two of the most grotesque attitudes indulged in.

The second figure, showing the bird with its beak resting on the ground, does not do full justice to the efforts of the bird to be peculiar. When free to do so, it stretched out its neck at full length, resting the tip of its beak on the ground and looking for all the world like a half-fallen and rotting stump of a bush. But on this occasion it was too near the glass to be able fully to extend its neck, and the waning light compelled us to be satisfied with that position.

I may add that both this bird and the Baillon's Crake reported last month (p. 427) have been purchased by Mr. Henry Willett, of Brighton, and presented by him to the Booth Museum, in which the collection of birds is being gradually extended, care being taken to case all additions in a manner worthy of the original collection, and yet to distinguish them from the cases prepared under Mr. Booth's personal direction.

[The inference to be drawn from these remarks is that the curious attitudes adopted by this bird, on finding itself observed, are assumed in the exercise of what may be termed the instinct of self-preservation, and in a state of nature must tend materially to favour its concealment. Whether it be standing in or near a reed-bed, erect, with neck preternaturally elongated and beak pointed upwards (as in fig. 1), or crouching (as in fig. 2) against a river-side tree-stump, the attitude is calculated to deceive the eyes of all but the keenest observers, especially since the colour of the bird's plumage harmonizes in a remarkable degree with that of the natural surroundings.

A similar habit has been observed and described by Mr. W. H. Hudson (Proc. Zool. Soc. 1875, p. 629) in the case of a South American Little Heron, *Ardetta involucris* (Vieillot), which frequents the borders of the La Plata, and is occasionally found in the reed-beds scattered over the pampas. Without the aid of dogs it was found impossible to secure any specimens of it, even after marking the exact spot where one had alighted. "This," says Mr. Hudson (*l. c.*), "I attributed to the slender figure it makes, and to the colour of the plumage so closely resembling that of the withering yellow and spotted reeds always to be found amongst the green ones; but I did not know for many years that the bird possesses a marvellous instinct that makes its peculiar conformation and imitative colour far more advantageous than they could be of themselves." He then describes, in a very graphic manner, the attitude assumed by one of these birds, which he had marked down, but which for a quarter of an hour he was quite unable to see, "for he was perched, the body erect and the point of the tail touching the reed grasped by its feet; the long, tapering, slender neck was held stiff, straight, and vertical; and the head and beak, instead of being carried obliquely,

were also pointing up. There was not from the feet to the tip of the beak a perceptible curve or inequality, but the whole was the figure (the exact counterpart) of a straight tapering rush; the loose plumage arranged to fill inequalities, the wings pressed into the hollow sides, made it impossible to see where the body ended and the neck began, or to distinguish head from neck or beak from head. The entire under surface of the bird was thus displayed, all of a uniform dull yellow like that of a faded rush." We quote here only a small portion of Mr. Hudson's description, which is too long to be given *in extenso*, but it deserves to be read in its entirety by all those who delight in the out-of-door study of birds, and admire such traits in their habits as are here described.—Ed.]

NOTES AND QUERIES.

MAMMALIA.

Habits of the Otter. — I have just read in 'The Zoologist' the interesting article, by the Editor, in which he alludes to the "Otter-slides" of North America. These, he tells us, are made and used by the Otters for sliding down the snow-covered slopes of hill-sides for the same reason that boys make a toboggan-slide, that is, simply for the purpose of enjoyment and fun. Incredible as the statement may appear, from the evidence adduced there can be no reason for doubting the truth of it. Of course, English Otters have not such opportunities or facilities for enjoying a quiet slide as their American cousins, otherwise it is probable that they might occasionally indulge in the same pastime. I have been told of an "Otter-slide" down a soft muddy bank in Wensleydale, but have not heard whether it has ever been used for recreation. Most probably it is utilised as the quickest way of evading pursuit. It is beyond doubt that when an Otter is suddenly disturbed on the top of a snow-covered slope near the river, it will glide down so cunningly and quickly that it is rarely seen. Several times I have been in close proximity to an Otter, and in spite of my sharp look-out it has contrived to sneak down to the river unobserved. I could relate several curious occurrences of this kind, but one will suffice. A few years ago, after a fresh fall of snow, I was walking along the banks of a frozen pool, about thirty feet distant from the river Yore, with a steep slope between, when I noticed a hole broken through the ice, which was of considerable thickness, and at the same time saw a coarse fish, partly eaten, laid near the edge of the ice. After satisfying myself that it was the work of an Otter, I turned round and then discovered that the animal had been concealed under some snow-covered branches close by, and whilst I was examining the spot it, had taken advantage of

my back being momentarily turned and glided down to the river, leaving a furrow behind resembling that which would be made by a small barrel going down endways. No traces of the pads were visible down the slope, but at the edge of a fringe of willows by the river side, the four feet had been used as a stop-brake to arrest its headlong course. In conclusion, I may add that I have several times noticed places where an Otter has left the river to enjoy a good roll on the sand, and also during winter time amongst the snow. I can recollect this district having been hunted by nine different packs of hounds, and the heaviest Otter that has been killed within a period of about fifty years weighed, I believe, 29 lbs. Mr. Wilkinson, of Neasham Abbey, is the present popular Master of Otter-hounds which hunt the river Yore and its tributaries in this locality.—James Carter (Burton House, Masham, Yorkshire).

Gestation of the Badger. — In an article on the Badger which appeared in 'The Zoologist' for 1888, some statistics were furnished on this subject (pp. 12, 13), which tended to prove that the usual or average period of gestation in this animal is twelve months, though, from some cause as yet unexplained, it has in several cases been prolonged much beyond this time. It may be as well to note, as a further item of information on the subject, that a female Badger which was captured alive *in Spain*, and brought home to this country by Mr. Assheton Smith, of Vaynol, in the month of February, gave birth in the February following to two young ones, as nearly as possible twelve months after her capture. This animal, although apparently an adult female, looked to me smaller than the general run of English Badgers, but in other respects resembled them.—J. E. Harting.

Rabbit breeding above Ground.—On Oct. 3rd I was out shooting, when a Rabbit got out of a tuft of grass, was shot at, and missed. In the seat which she had left, we found six young ones, about three days old. The following day I went to look at them again, but they had been removed. Is not this very unusual?—A. C. Spence (Kilnwick Hall, near Hull).

[Instances in which young Rabbits have been found born above ground are not common; nevertheless several have been reported. In 'The Field' of Dec. 2nd, 1876, a case is mentioned by Mr. W. Southam, of Durrington, near Amesbury, in which a flat "form" like that of a Hare was found in turnips, and contained four newly-born young. The old doe was unfortunately shot as she left the form, before it was discovered (Zool. 1877, p. 18). Mr. Cordeaux also has reported ('Field' of Dec. 9th, 1876) a nest of four young Rabbits, a few days old, out in a bare fallow field. In this case, although the hollow in which they lay was bedded with down, there was no covert or shelter of any kind around it. In the succeeding

number of 'The Field' (Dec. 16th) a still more curious case is mentioned by Mr. Hardy, of Burley-on-the-Hill, Oakham, who states that a nest of five young Rabbits was found inside an old bag stuffed with straw which had been used as a scarecrow, and had fallen to the ground.—Ed.]

BIRDS.

American Red-breasted Thrush in Leicestershire.—Agreeably to your request that I should furnish some particulars of the occurrence of *Turdus migratorius* in Leicestershire, to which I referred in my last letter, I have much pleasure in telling you all I know about it. The bird in question was captured near Leicester, in October, 1893, whilst in company with a flock of Redwings. Being in beautiful plumage, it was kept alive by the man who caught it, and soon became pretty tame. During the succeeding winter it came into the possession of my father-in-law, Mr. Jacob, of Royal Cliff, Sandown, Isle of Wight, and has ever since been kept in excellent health and feather. I have often seen it myself, and can answer for the particulars above given.—H. M. Langdale (Compton, Petersfield).

[This makes the third reported instance of the occurrence of *Turdus migratorius* in England. See Zool. 1877, p. 14; and 1891, p. 219.—Ed.]

On the Recent Occurrence of the Yellow-browed Warbler in Yorkshire and Norfolk.—The attention which of late years has been paid to the smaller migratory birds during their autumnal migration has led to the discovery that several species which have been long regarded as rare stragglers to England are most likely annual summer visitors; their small size and unobtrusive colouring causing them to be generally overlooked. Amongst these may be named the Marsh Warbler, *Acrocephalus palustris*, the Barred Warbler, *Sylvia nisoria*, the Icterine Warbler, *Hypolais icterina*, and the Yellow-browed Warbler, *Phylloscopus superciliosus*. The last-named species has been met with in two localities during the past autumn, and it will be well to place the fact on record in the pages of 'The Zoologist' for future reference. On Oct. 8th, Mr. Swailes, an observant nurseryman, at Beverley, hearing the note of a small warbler which was unfamiliar to him, shot the bird, and sent it for identification to Mr. F. Boyes, who pronounced it to be *Phylloscopus superciliosus*, and on communicating this information, Mr. Swailes found and shot two others in the same locality. Mr. Boyes having reported this interesting occurrence in 'The Field' of Oct. 27th, Mr. J. H. Gurney, in the succeeding issue (Nov. 3rd), announced that on Oct. 1st one of these little birds was shot on the coast of Norfolk by a labouring man, who fired at it merely for the purpose of unloading his gun! As ten instances of the occurrence of this species in the British Islands have now been made known, its claim to be

regarded as a British bird, which for a quarter of a century remained doubtful, may now be said to be established. In appearance it might be mistaken for a Goldcrest, *Regulus cristatus*, but, as observed by Mr. Caton Haigh (Zool. 1892, p. 413), may be detected by "its quick and even flight and brighter colour." Moreover, there is a double bar of pale yellow across the wing-coverts and a white superciliary streak, which suggested the specific name. Its true home is apparently in Siberia, where Mr. Seebohm found it breeding, in the forest between the Yenesei and the Koorayika. The nest, a semi-domed one, was on the ground in a tuft of grass, composed of dry grass and moss, lined with reindeer-hair, the eggs resembling those of the Willow Warbler, *Phylloscopus trochilus*.—J. E. Harting.

Breeding of the Saffron Finch (Sycalis flaveola) in Confinement.—For some years past I have from time to time attempted to breed Saffron Finches. It is generally supposed that these birds are easy to breed, yet, until the present year, I was never successful; until the winter of 1892–3 they never showed any inclination either to nest or to lay. Last year I turned loose a hen of Pelzeln's Saffron Finch, with two males and a female of the common species, in my Weaver-aviary; and this year I purchased another pair, and turned them into a large flight-cage. In the aviary I hung up some large boxes (somewhat after the pattern of sentry-boxes), and in the cage I hung up a cigar-box, perpendicularly, one-third of the lid being removed from the upper end, and the other two-thirds nailed down. The hen bird in the cage began to sit early in May, the first young bird leaving the nest on June 8th, and two others on the following day. These young birds, bred from pure Saffron Finches, were greenish grey above, with black centres to the feathers, the throat yellowish, the breast clear yellow, the chest, abdomen, and vent white. A day or two later I heard young birds in one of the boxes in my Weaver-aviary, and on July 14th the first young bird left the nest, followed on the two succeeding days by two others. The latter were altogether duller and darker birds than those bred in the cage, showing no yellow on the breast; I suspect them to be a cross between *S. flaveola* and *S. pelzelni*, but as all four adult birds fed them, it was difficult to decide as to their parentage, though they seemed to follow the hen of Pelzeln's Finch more than that of *S. flaveola*. Meanwhile, in the cage, the parents began to chase their youngsters, and therefore I removed the latter, when I discovered that their mother had already laid again; so that it was impossible to clear out the nest-box. This time three young birds were carried out dead, and one only left the nest late in July. Finches seem to object to bringing up single youngsters; consequently the male bird alone fed this fledgling, and at the end of a week he began to persecute it. I removed it at once, and placed it with the three others of the previous nest; but, when I went to clean out the nest-box, I found the

hen sitting, so I foolishly left her alone, the result being that all the young ones died. In August the pair in the bird-room again had a nest, for the safety of which I became somewhat alarmed, when I saw the young birds of the preceding nest following their parents into the box; but, upon sitting down and examining them attentively with a pair of opera-glasses, I ascertained that they were assisting to feed their younger brethren. This they did regularly until three more left the nest. Of the four young birds in the cage, three died; and I soon discovered that, when closely confined, they quarrel a good deal, plucking one another on the nape and flanks. In the bird-room, though they constantly pursue one another there is no plucking, and the exercise, which is extremely vigorous, seems to do them good. On the death of the third family in the flight-cage, I immediately took out the box, and replaced it by a larger and cleaner one, ramming a quantity of new hay into the bottom, and supplying the birds with feathers, moss, and cow-hair. A fourth lot of youngsters can now be distinctly heard (Sept. 26th), and will probably leave the nest early in October. There seems to be a prevalent notion that Saffron Finches build like Sparrows, but this is quite a mistake; the nest, though built in an enclosure, is a tolerably neatly formed saucer-shaped structure upon a thick foundation of hay and rubbish. At times the foundation is piled up nearly to the top of the box, leaving only just room for the parents to creep over the top; at other times it is quite deep down, so that, when feeding, the birds have to jump down into the enclosure. Like all *Fringillinæ*, Saffron Finches feed from the crop, and my young birds have all been reared on a mixture of potato, bread-crumbs, preserved yolk of egg, ants' cocoons, and Abrahams' food, together with canary, millet, and paddy-rice. At first the old birds feed them chiefly on the soft food, but as the nestlings grow, they also eat a good deal of seed, more especially the paddy and canary-seed. Male and female feed alternately, each waiting until the other has emptied its crop before entering the nest. In the bird-room the fledged young torment their parents to feed them for about three weeks, though at the end of a week they are well able to cater for themselves. As is well known, the eggs are short ovals, more spherical than those of a Sparrow, though somewhat like boldly-marked specimens of the eggs of *Passer* in character. The hen alone incubates, fourteen days. Number of eggs generally four to five; in most cases I had four hatched, but only three reared. In captivity *Sycalis* appears to have no settled breeding season like *Serinus*, but, if permitted to do so, will rear brood after brood throughout the year; five nests in a year are not unusual. Young Saffron Finches are well able to fly when they leave the nest, and on the second day their flight is tolerably strong, though not sustained; in a week they are as rapid on the wing as their parents.—A. G. Butler (Beckenham).

BATRACHIA.

The Movements of the Frog. — An extremely ingenious working model of a Frog has just been submitted to us by Messrs. Herbert Crossley and Theodore Birnbaum, the inventors and patentees. It is life-size, composed of inflatable india-rubber, and coloured to resemble a living animal. Connected with it is a long and very slender flexible india-rubber tube, terminating in a small rubber-ball which is held in the palm of the hand. On placing the frog on the ground or in the water and applying pressure in jerks to the india-rubber ball, air is forced into the hind limbs, which are thereby extended in the most natural manner, and cause the body to move forward. By placing it on a convenient ledge the frog may be made to dive into the water. It will remain and swim below the surface by using slight pressure, which should be sharply removed at each stroke. In this way the operator is able to produce the most life-like movements at any desired rate of speed, and so study them at leisure. We are informed that the "automatic swimming frog," as it is termed, will soon be procurable at all the principal toy-shops in the metropolis.

SCIENTIFIC SOCIETIES.

Linnean Society of London.

November 1*st*, 1894. — Mr. C. B. Clarke, F.R.S., President, in the chair.

Messrs. Arthur P. Green and F. Lewis were elected Fellows. Mr. Alexander Whyte was admitted.

Messrs. H. and J. Groves exhibited an undescribed *Chara* from Westmeath, and made remarks upon its peculiar mode of growth.

Mr. J. O. Tepper exhibited photographs of a new and remarkable Fungus from South Australia, *Laccocephalum basilapiloides*, which explained the formation of the peculiar stone-like nodules occasionally found when clearing scrub-land. These were found to be due to the agglutinating nature of the mycelium of this fungus, the grains being permanently cemented by lime and ferruginous oxides.

The Rev. G. Henslow made some remarks on a peculiar mode of propagation of *Oxalis cernua*, observed in Malta, and exhibited some views taken during his sojourn there.

Mr. Miller Christy exhibited a long piece of leaden pipe which had been gnawed through its entire length by rats, in a manner which showed that the object was not, as generally supposed, to get access to water.

Mr. H. M. Bernard exhibited some photographs of corals taken with the "Kodak" camera.

A series of that remarkable beetle, *Goliathus giganteus*, from West Africa, was shown by Dr. Heath, and Mr. E. M. Holmes exhibited some curious plants from Japan.

On behalf of Mr. A. W. Waters, a paper was then read "On Mediterranean and New Zealand Retipora, and on a fenestrate Bryozoan;" and, on behalf of Dr. J. Müller, a paper "On Lichens in the Kew Herbarium."

Nov. 15*th*.—Mr. C. B. Clarke, F.R.S., President, in the chair.

Dr. David Prain was admitted a Fellow.

Mr. J. E. S. Moore exhibited preparations illustrative of his investigations concerning the origin and nature of the achromatic spindle in the spermatocycles of Elasmobranchs. His results were approximately in agreement with those arrived at by Hermann in regard to the corresponding elements in Amphibia, and more in accord with those of Ishikawa relating to the division of Noctiluca. As to the spindle fibres themselves, it appeared that during the diastral stage of the division they were the optical expression of thickenings in the wall of a membranous cylinder stretched out between the chromosomes.

The Rev. G. Henslow exhibited some curious iron implements, of somewhat varied pattern, used in Egypt for cutting off the top of the Alexandrine fig, *Ficus sycamorus*, Linn.; the operation being necessary to render it edible by getting rid of the parasitical insect *Sycophaga crassipes*, Westw., with which it is always infested. The practice was said to be very ancient, being described by Theophrastus, and alluded to by the same word, κνίζων, in the Septuagint version of the Old Testament (Amos vii. 14), in translating from the Hebrew.

Mr. H. N. Ridley showed some drawings of the green larva of a Sphinx moth mimicking a green tree-snake, *Trimeresurus wagleri*, as well as a cluster of caterpillars mimicking a fruit, all of which were found in Singapore. He also exhibited a drawing from life of the tan-producing Gambir-plant, *Uncaria gambir*, in flower.

Mr. Thomas Christy exhibited some germinating seeds of pepper, showing the testa being carried up by the cotyledons.

A paper was then read by Dr. D. Prain on the plant yielding Bhang, *Cannabis sativa*, illustrated by lantern-slides.

A paper on the proposed revision of the British Copepoda, by Mr. Thomas Scott, was, in the unavoidable absence of the author, communicated by the Secretary.

Zoological Society of London.

November 6*th*, 1894.—Sir W. H. Flower, K.C.B., LL.D., F.R.S., President, in the chair.

The President read a letter addressed to him by the late Emin Pasha, containing a diary of ornithological observations made during the last part

of his journey towards the Congo. This letter and journal had been taken from the Arabs on the Upper Congo and forwarded to the President by the Officers of the Congo Free State.

The Secretary read a report on additions to the Society's Menagerie during June, July, August, and September, and called special attention to two fine specimens of the Hamadryad Snake of India and Burmah (*Ophiophagus elaps*; a series of mammals and birds from British Central Africa, presented by Mr. H. H. Johnston, and brought home by Mr. Alexander Whyte; a young male White-tailed Gnu, *Connochætes gnu*, born in the Menagerie on June 23rd, being the first occasion of this Antelope having bred in the Society's Gardens; a female Eland of the striped form, *Oreas Canna livingstonii*, from the Transvaal, the first individual of this variety received by the Society; two Giant Tortoises, *Testudo elephantina*, from the Aldabra Islands, presented by Rear-Admiral W. R. Kennedy; a young male Antelope, *Tragelaphus gratus*, bred in the Zoological Gardens, Hamburg, and received July 27th.

Mr. F. E. Blaauw communicated some remarks on the colour of the bill in a living specimen of *Cygnus americanus*.

Mr. R. Trimen forwarded a reply to remarks of Dr. A. G. Butler on his paper on the Manica Butterflies collected by Mr. Selous.

Dr. R. W. Shufeldt sent a correction to his paper "On the Affinities of the *Steganopodes*," recently published in the Society's 'Proceedings.'

Mr. O. Salvin exhibited a pair of the newly described butterfly *Ornithoptera paradisea*, from the Finisterre Mountains, German New Guinea.

Mr. C. D. Sherborn exhibited a copy of, and made remarks on, the recently published reprint of George Ord's 'American Zoology.'

Mr. G. A. Boulenger exhibited a Gecko, forwarded by Mr. R. T. Lewis, which had been captured in winter, fully active, on the snow upon the highest portion of the Drakensberg Range, Natal. It belonged to a genus believed until 1888 to be characteristic of the Australian fauna, and differed from its nearest ally, *Œdura africana*, in the smaller and convex granules covering the head, and in the rostral shield not entering the nostril. Mr. Boulenger proposed for it the name *Œdura nivaria*.

Mr. Martin Jacoby read descriptions of new species of *Œdionychis* and allied genera of Coleoptera.

Mr. W. G. Ridewood read a paper on the hyoid arch of *Ceratodus*. The author instituted a comparison between the ventral elements of the hyoid arch of *Ceratodus* and the basi- and hypo-hyal cartilages of the Elasmobranchii. The relations of the hyomandibular cartilage were dealt with in detail, and attention was called to the wide range of variation which this vestigial cartilage exhibits. Arguments were also adduced to show that there is no connection between the reduction of the hyomandibular in the Dipnoi and its adaptation as a secondary suspensorium in the hyostylic fishes.

Mr. G. A. Boulenger read a third report on additions to the Batrachian Collection in the Natural History Museum, containing a list of the species, new or previously unrepresented, of which specimens had been added to the collection since 1890, and descriptions of some new species.

Mr. R. J. Lechmere Guppy communicated an account of some Foraminifera from the Microzoic Deposits of Trinidad.

The Secretary read some remarks from Sir Walter L. Buller on a Petrel lately described as new by Capt. Hutton under the name of *Œstrelata leucophrys*.—P. L. Sclater, *Secretary*.

Entomological Society of London.

November 7th.—Colonel Charles Swinhoe, M.A., F.L.S., Vice-President, in the chair.

Mr. W. P. Blackburne-Maze, of Shaw House, Newbury, Berkshire, and Mr. Bertram George Rye, of 212, Upper Richmond Road, Putney, S.W., were elected Fellows of the Society.

Colonel Swinhoe exhibited a female of *Papilio telearchus*, Hewitson, which he had received by the last mail from Cherra Punji. He said that this was the only known specimen of the female of this species, with the exception of one in Mr. L. de Nicéville's collection, which he had described in the 'Journal of the Bombay Natural History Society' in 1893. He also exhibited a male of the same species for comparison.

Mr. C. G. Barrett exhibited abnormal forms of *Pararge megæra*, *P. ægeria*, *Melitæa athalia*, *Chrysophanus phlæas*, *Charæas graminis*, *Lophopteryx camelina*, *Plusia gamma*, *Cucullia chamomillæ*, *Boarmia repandata* var. *conversaria*, *Cidaria psittacata*, and other species, all collected by Major J. N. Still on Dartmoor, Devon. He also exhibited, for Mr. Sydney Webb, of Dover, a long series of most remarkable varieties of *Arctia caja* and *A. villica*.

Mr. Gervase F. Mathew exhibited seven beautiful and striking varieties of *Arctia villica*, bred from larvæ obtained on the Essex coast, near Dovercourt, in March and April, 1893 and 1894.

Herr Jacoby exhibited two specimens of *Blaps mucronata*, with soft elytra, taken on a wall at Hampstead. The Rev. Canon Fowler and Mr. G. C. Champion made some remarks on the subject of the elytra of immature beetles.

Mr. H. Goss exhibited a specimen of *Periplaneta australasiæ*, received from Mr. C. E. Morris, of Preston, near Brighton. Mr. McLachlan said the species had been introduced into this country, but was now considered a British insect.

Mr. B. G. Rye exhibited specimens of the following rare or local

species of Coleoptera, and gave the names of the localities in which they had been taken:—*Cicendela germanica*, *Eumicrus rufus*, *Triarthron markeli*, *Mezium affine*, *Homaloplia ruricola*, *Anomala frischi* var. *julli*, *Synaptus filiformis*, *Lixus paraplecticus*, *Balaninus cerasorum*, *Asemum striatum*, and *Zeugophora flavicollis*.

Mr. McLachlan exhibited, for Mr. G. C. Bignell, of Plymouth, two new species of Ichneumonidæ, from Devonshire, viz., *Pimpla bridgmani*, Bign., a parasite on a spider, *Drassus lapidicolens*, Walck.; and *Praon absinthii*, Bign., a parasite on *Siphonophora absinthii*, Linné.

Mr. C. O. Waterhouse stated that the *Acridium* received from Capt. Montgomery, and exhibited by Mr. Goss at the last meeting, was *Acridium septemfasciatum*, and he exhibited the species with the wings extended.

Mr. Ridley exhibited a species of a scale insect (? *Lecanium*) found on a nutmeg tree in Malacca, and made some remarks on *Formica smaragdina*, which makes its nest on the trees, joining the leaves together by a thin thread of silk at the ends. The first step in making the nest is for several ants to bend the leaves together and hold on with their hind legs, and one of their number after some time runs up with a larva, and, irritating it with its antennæ, makes it produce a thread with which the leaves are joined; when one larva is exhausted a second is fetched, and the process is repeated.

Mr. Waterhouse read a paper entitled "Some remarks on the Antennæ of Insects." A discussion followed, in which Messrs. Champion, Jacoby, McLachlan and Gahan took part.—H. Goss and W. W. Fowler, *Hon. Secretaries*.

NOTICES OF NEW BOOKS.

A Reprint of the 'North American Zoology' by George Ord. Originally published in the second American edition of 'Guthrie's Geography,' 1815: taken from the Author's own copy; with an Appendix by Samuel S. Rhoads. 8vo, pp. i—x; original title; pp. 290—361; Appendix and Index, pp. 1—90. Haddonfield, New Jersey. 1894.

The name of George Ord, from his association with Alexander Wilson, and as an early writer on North American Zoology, is tolerably familiar from citation by subsequent authors; but the publication on which his fame chiefly rests is of such rarity that we have never seen a copy in this country, and have heard of only

two which are preserved in America. Why it should be so rare we cannot say, unless the bulk of the edition was perhaps destroyed by fire. At any rate original copies are now quite unprocurable, and we are indebted to Mr. Rhoads for enabling us to estimate its scientific worth by means of an exact reprint which he has just issued. As to the history and nature of the work, a few words of explanation seem necessary.

In 1794–95 was projected and published, in Philadelphia, a sort of General Gazetteer, or geographical, historical, and commercial Directory, which, having too long a title for general quotation, came to be known as 'Guthrie's Geography.' Between the date of the original edition and that of 1815, to which George Ord became a contributor, there appeared (in 1814) an important publication entitled "A History of the Expedition, under the command of Captains Lewis and Clarke to the sources of the Missouri, thence across the Rocky Mountains, and down the River Columbia to the Pacific Ocean: Performed during the years 1804–5–6: By order of the Government of the United States." Ord having examined the zoological collections brought home by these explorers, and having named a number of species which appeared to him to be new, or undescribed, or to require naming, was induced to publish the results in an article on the Zoology of North America in the new edition of 'Guthrie's Geography' which appeared in 1815. His name was not appended to this, a prefatory note from the publishers explaining that "the modesty of the author forbids a personal acknowledgment which the editors would have the highest satisfaction in making."

Only through the recognition of his associates, and in a great measure owing to the citations by Prof. Spencer Baird in his work on the Mammals of North America, is the scientific world enabled (as Mr. Rhoads puts it) "to accord to the author of 'Ord's Zoology' the honour and distinction which he humbly sought to avoid."

Such, briefly speaking, is the history of the work. The scientific value lies in the lists of Mammals (pp. 291–92) and the observations upon them (pp. 293–313); Birds (pp. 313–356); and Amphibia (pp. 357–360); with a few remarks on Fish and Insects (pp. 360–361), none of which are given in any other edition of 'Guthrie's Geography.'

Looking casually through the volume, we are inclined to think that its value has been perhaps a trifle overrated.

Extracts are very properly given from the Report of Lewis and Clarke, but there is also much compilation from the writings of Wilson, Brackenridge, Umfreville, Pike, Lawson, Pennant, and others. In other words, there is a lack of originality about the work. The classification adopted is that of Turton's edition of Linnæus, but there is no attempt at scientific descriptions, even of species to which for the first time he gives scientific names. These names are not always restricted to new species, and sometimes even (as in the case of the Louisiana Marmot) are bestowed at a venture upon species of which he had apparently seen no specimens.

But in noting these shortcomings, upon which we do not desire to lay undue stress, allowance should be made for the difficulties which must have attended the preparation of such a work eighty years ago. Taking this into consideration, it must be admitted that George Ord, according to his lights, rendered good service to zoological science, and in future, whenever it may become necessary to test the value or particular bearing of any of his observations, we shall be able, thanks to Mr. Rhoads, to refer at once to his exact words without fear of misquotation.

Allen's Naturalists' Library. Edited by R. B. Sharpe. *A Handbook to the Birds of Great Britain.* By R. B. Sharpe. Vol. I. Post 8vo., pp. i—xxii; 1—342. With 31 coloured plates. London: W. H. Allen & Co. 1894.

This is the first of a new series of volumes on general zoology, which has been planned, apparently, to enable the publishers to use up the old plates of 'Jardine's Naturalists' Library.' That work appeared fifty years ago (1833-43) in forty volumes, and for many years later undoubtedly served a very useful purpose. Every one is familiar with it; but it is now hardly ever referred to, for the simple reason that it is "out of date." The study of Zoology, like that of most other subjects, is progressive; and since Jardine's deservedly popular work appeared in a second edition (1846-66), the discoveries by naturalists abroad, and the researches of those at home, have completely revolutionised many of the views that were put forth at the date referred to.

In our humble opinion the publishers should have remembered that "art" also is progressive; and to issue as specimens of book-illustration, in 1894, plates that passed muster in 1844, is a retrograde step which is much to be deplored.

To re-issue the text, also, with no more alterations than might be necessary to bring it fairly up to date, sounds well in theory, but in practice would be impossible. The changes in classification and nomenclature, the discovery of new species, the extension of knowledge on the subjects of distribution, migration, seasonal changes of colour, and even, in some cases, of structure, *e.g.* in the Puffin, would render any such attempt futile. There was obviously nothing for it but to re-write the text *de novo*, and this it has been decided to do.

At the outset we take exception to the title. In the old days the name of the serial was associated with the name of the editor, not that of the publisher. Why has this proper order of things been reversed? To the term "Handbook" we object for two reasons: first, because it is "preoccupied" in relation to 'British Birds'; and secondly, because—the work being in more than one volume—the term is strictly speaking inapplicable. However that may be, the title is now published, and we have to deal with the work as we find it. Whether it was wanted at all is a question on which we have some doubt; for it seems to us that in the fourth edition of Yarrell, so admirably elucidated and improved by Prof. Newton; in the excellent 'Manual' by Mr. Howard Saunders; and in the extensive field-notes and beautifully coloured plates in Mr. Seebohm's work, the modern student of Ornithology has practically all that he can possibly desire or wish for in the shape of text-books. Dr. Sharpe's new volume, if it teaches us anything, teaches us to unlearn much that we knew before, and to commit to memory a new scheme of classification and much new nomenclature. To this, on the score of needlessness, we very much object.

Linnæus (for whose nomenclature Dr. Sharpe very properly professes reverence), in arranging his Orders of Birds, commenced with the *Accipitres*, or birds of prey. In this he has been followed, for more than a century, by the leading ornithologists of England, France, and Germany, to say nothing of other nations. Some five-and-twenty years ago the tide turned; Prof. Huxley proposed a new scheme of classification, based upon the form of the palatal

bone;* this was adopted, with modifications, by Dr. Sclater, in 1873,† and followed by a Committee of the "British Ornithologists' Union," which, ten years later, was formed for the purpose of drawing up an authoritative 'List of British Birds.' In this classification (followed also in the 'List of Vertebrate Animals living in the Zoological Society's Gardens,' and other works) the scheme commences with the Order *Passeres*, and the first birds on the list are the Thrushes.

A few years later (1886) a Committee of American Ornithologists issued an authoritative 'Check List' of North American Birds,‡ in which the Order *Pygopodes*, or Diving-birds, stands first, headed by the Grebes; and this, of course, has been followed by subsequent American writers. In commencing the new edition of Yarrell's 'British Birds,' Prof. Newton saw no reason to depart from Linnæus's lead, in which we quite agree. Messrs. Seebohm and Saunders, on the other hand (with proper consistency we must admit), follow the classification which, as members of the B. O. U. Committee, they helped to make and promulgate. Dr. Sharpe, who in 1874 commenced the famous 'Catalogue of Birds in the British Museum' with the *Accipitres*, has since altered his views, and, cutting adrift from both the A. O. U. and the B. O. U. (that is to say, in the matter ef classification and nomenclature), now steers a new course, which starts from the Crows!

In his prefatory remarks on the Order *Passeriformes*, section *Oscines* or Singing-birds (in which, *prima facie*, it seems very ironical to place the Crows), he observes:—

"The structure of a Raven or a Crow presents as complete an equipment as one can imagine a bird to require—a powerful bill with well-developed nasal plumes, a compact and regular plumage, strong wings and tail, with every series of wing-covert beautifully patterned, and, lastly, powerful feet and claws, with every scale distinctly indicated.

"The Crows, therefore, have a right to be placed at the head of the *Oscines*, in preference to the Thrushes, which excel them only in singing, beauty of voice being a feature to which the Crows can lay no claim."

---

* Proc. Zool. Soc. 1867, p. 415.

† 'Nomenclator Avium Neo-Tropicalium,' 1873. See also 'The Ibis,' 1880, pp. 340—350; 399—411.

‡ 'The Code of Nomenclature and Check List of North American Birds adopted by the American Ornithologists' Union' (New York, 1886).

This appears to us illogical; for, surely, at the head of the Singing-birds should be placed those which "excel in singing," unless Dr. Sharpe would begin at the other end of the scale in the order of merit, and commence with those species which do not sing at all, and end with the Thrushes, which sing splendidly. But this he does not do; for we find the Thrushes interpolated (pp. 241—303) between the *Sylviidæ* and the *Accentoridæ*, a "family" which, with all due deference, we consider unnecessary. The position we have always taken up is that, "flight" being the chief characteristic of birds as distinguished from every other class of vertebrate animals, we should place at the head of any scheme of classification those forms in which "flight" is most highly developed and perfected, namely, the birds of prey, which are able to overtake and capture any other species when brought into competition with it on the wing. Thus the highest type of bird, from our point of view, is to be found amongst the long-winged Falcons, which have the additional merit of possessing the highest degree of intelligence amongst birds.

As to nomenclature, we are perfectly aghast at the changes proposed by Dr. Sharpe. To take the genus *Corvus*, for example, he will only allow it to include (so far as Great Britain is concerned) a single species, *corax*. The Rook he would call *Tryphanocorax frugilegus*, the Crow *Corone corone*, the Jackdaw *Colœus monedula*, and so forth. This, as it seems to us, is carrying differentiation much too far, and needlessly so; for surely all these birds have sufficient points of resemblance to justify their being grouped together, for all practical purposes, in one and the same genus.

This brings us to another point. We utterly dissent from the proposal to give the typical species of a genus the same name as that of the genus, as Dr. Sharpe has done in the case of *Corone corone*, *Pica pica*, *Graculus graculus*, *Cannabina cannabina*, and a host of others. The adoption of such a course is to destroy the whole value of the binomial system, and, as it seems to us, is indefensible. We are told that it is justified by Linnæus himself, who has described the Common Mackerel under the name of *Scomber scomber*. But if this be the only justification that can be pleaded, it may be at once dismissed by a very simple explanation. What Linnæus wrote and intended to have printed in this case was *Scomber scombrus*. This is proved by his own

interleaved copy of the twelfth edition of the 'Systema Naturæ' (1766),—the last published in his lifetime,—which is preserved in the library of the Linnean Society. In this copy we find the necessary correction of the specific name from *scomber* to *scombrus*, showing clearly that he had no intention of taking the course upon which Dr. Sharpe and others now insist. The sooner, therefore, this misapprehension is removed the better for future students of Ornithology.

As to the information given in regard to the occurrence of the "rarer visitors" to Great Britain, we do not find it so complete or detailed as it should be in a new book on British Birds; but possibly this may be due to the exigencies of space, and the wish of the publishers to condense as much as possible, having regard to the number of volumes which the series is to contain. The old plates, many of which are misplaced, we never admired; the figures are flat and the outlines hard. The few new ones by Mr. Keulemans which have been introduced are far superior, and the old ones lose in merit by comparison. Instead of figuring a number of well-known species with which every one is more or less familiar, we should much have preferred to see the outlay expended upon the delineation of certain less-known species, such as *Phylloscopus superciliosus*, *Hypolais icterina*, *Sylvia nisoria*, *Anthus cervinus*, *A. campestris*, and *A. Richardi*, *Emberiza pusilla*, *E. rustica*, and *E. cioides*, *Alauda brachydactyla*, *Fringilla serinus*, *F. canicapillus*, and others. It is true that good figures of these may be found in other works, but that is the case of course with all the rest, and were we to adopt this plea we might dispense altogether with illustrations.

It is far from our intention to disparage what Dr. Sharpe has written. His long experience as an ornithologist, having considerable knowledge of the birds not merely of Great Britain but of the world, gives great weight to his words; but it is precisely on account of his authority that we venture, in all friendliness, to protest against certain portions of his teaching, as being indefensible in principle, and calculated to retard rather than advance the study of Ornithology.

WEST, NEWMAN AND CO., PRINTERS, HATTON GARDEN, LONDON, E.C.